

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Stephen Mark KEATING et al.

U.S. Serial No.: Filed Concurrently Herewith

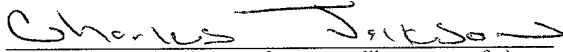
Title of Invention: EMBEDDING DATA IN MATERIAL

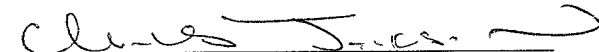
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PRELIMINARY AMENDMENT

U.S. Patent and Trademark Office
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Sir:

Before the issuance of the first Office Action, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claim 21-24, 27, 28, 33 and 52 as follow:

21 (Amended) A method according to claim 1, wherein the data is imperceptibly embedded in the other material.

22. (Amended) A method according to claim 1, wherein the set $\{C_n\}_i$ consists of unmodified coefficients.

23. (Amended) A method according to claim 1, wherein the set $\{C_n\}_i$ consists of modified coefficients preceding C_i where the coefficients are serially ordered.
24. (Amended) A method according to claim 1, wherein the set $\{C_n\}_i$ comprises at least one modified coefficient and at least one unmodified coefficient.
27. (Amended) A method according to claim 25, wherein the said set $\{C_n\}_i$ comprises at least one modified coefficient and at least one restored coefficient, the coefficients preceding C'_i .
28. (Amended) A method according to claim 25, further comprising the step of determining the values of the data bits W_j embedded in the material by correlating a reference pseudo random symbol sequence with the modified coefficients C'_i and decoding the correlation values to determine the data W_j modulating the pseudo random sequence and remodulating the reference sequence with the said data to restore R_i .
33. (Amended) Apparatus according to claim 29, further comprising means for determining the values of the data bits W_j embedded in the material, said means comprising a correlator for correlating a reference pseudo random symbol sequence with the modified coefficients C'_i , a decoder for decoding the correlations to determine the data W_j modulating the modulated sequence and a modulator for remodulating the reference sequence with the said data to restore R_i .
52. (Amended) A system comprising embedding apparatus according to claim 49, and removing apparatus linked by a channel to said embedding apparatus, the removing apparatus comprising:
- a remover for removing the data from the said second material to produce recovered material;
 - a deriver for deriving the said corrections and identifying data from the said store; and

a corrector arranged to use the stored corrections to correct the recovered material at the said locations identified by the identifying data.

Add the following new claims:

59. (New) Apparatus according to claim 12, wherein the data is imperceptibly embedded in the other material.
60. (New) Apparatus according to claim 12, wherein the set $\{C_n\}_i$ consists of unmodified coefficients.
61. (New) Apparatus according to claim 12, wherein the set $\{C_n\}_i$ consists of modified coefficients preceding C_i where the coefficients are serially ordered.
62. (New) Apparatus according to claim 12, wherein the set $\{C_n\}_i$ comprises at least one modified coefficient and at least one unmodified coefficient.

REMARKS

Claims 1-62 remain in the application. Claims 21-24, 27, 28, 33 and 52 have been amended to eliminate multiple dependencies. New claims 59-62 have been added. Attached hereto is a marked up version of the changes made to claims 21-24, 27, 28, 33 and 52 by the current amendment. The attached pages are captioned **“Version with markings to show changes made.”** The filing fee has been calculated based upon the amendments to the claims.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE**In the claims:**

21. (Amended) A method ~~or apparatus~~ according to claim 1, wherein the data is imperceptibly embedded in the other material.
22. (Amended) A method ~~or apparatus~~ according to claim 1, wherein the set $\{C_n\}_i$ consists of unmodified coefficients.
23. (Amended) A method ~~or apparatus~~ according to claim 1, wherein the set $\{C_n\}_i$ consists of modified coefficients preceding C_i where the coefficients are serially ordered.
24. (Amended) A method ~~or apparatus~~ according to claim 1, wherein the set $\{C_n\}_i$ comprises at least one modified coefficient and at least one unmodified coefficient.
27. (Amended) A method ~~Apparatus~~ according to claim 25, wherein the said set $\{C_n\}_i$ comprises at least one modified coefficient and at least one restored coefficient, the coefficients preceding C_i .
28. (Amended) A method according to claim 25, further comprising ~~wherein~~ the step of determining the values of the data bits W_j embedded in the material by ~~according to the method of claim 11 comprises~~, correlating a reference pseudo random symbol sequence with the modified coefficients C_i' and decoding the correlation values to determine the data W_j modulating the pseudo random sequence and remodulating the reference sequence with the said data to restore R_i .
33. (Amended) Apparatus according to claim 29, further comprising ~~wherein the~~ means for determining the values of the data bits W_j embedded in the material, ~~according to the method of claim 12, comprises~~ said means comprising a correlator for correlating a reference pseudo random symbol sequence with the modified coefficients C_i' , a decoder for decoding the

correlations to determine the data W_j modulating the modulated sequence and a modulator for remodulating the reference sequence with the said data to restore R_i .

52. (Amended) A system comprising embedding apparatus according to claim 49, and removing apparatus ~~according to claim 51~~ linked by a channel to said embedding apparatus, the removing apparatus comprising:

a remover for removing the data from the said second material to produce recovered material;

a deriver for deriving the said corrections and identifying data from the said store; and

a corrector arranged to use the stored corrections to correct the recovered material at the said locations identified by the identifying data.